Notes.

WITH regard to the article on "University and Civil Service Salaries" published in our issue of August 25, the editor of the *Civil Service Gazette* has written to say that "the proportion of Civil Servants receiving above 500*l.* per annum is relatively very small, whereas the number of teachers receiving this amount all over the country is decidedly large." The latter part of this statement, we may say, even if it were true, is quite beside the point. That a large number of teachers all over the country should receive more than 500*l.* per annum does not make the lot of a large number of university teachers who receive less than 500*l.* per annum any better or more endurable. It may be recalled that the article arose out of a letter (and subsequent correspondence) from the Provost of Worcester College to the *Times* of August 15. This letter stated, *inter alia,* that many Civil Servants receive double, and even treble, the salary that the greatest learning and distinction can obtain at Oxford, and this notwithstanding that, with few exceptions, Civil Servants of the highest class are men whose intellectual attainments, as tested in examinations, fall considerably short of the standard of a tutorial fellowship at Oxford. If, therefore, any comparison of emoluments is to be made, it should not be as between university teachers and the whole body of the Civil Service, but as between university teachers and Civil Servants *of the highest class.* When this is done we find, as stated in our article, that the emoluments of university teachers fall considerably below those of this class, and we mentioned the modest 800*l.* a year of a tutorial fellow of Oxford, and referred to the fact that the permanent heads of Government Departments after September 1 will receive "only" 3000*l.* a year—as one of the *Times* correspondents quaintly puts it. Whether Civil Servants of the highest class are overpaid or not is a question which we did not discuss. But we had no hesitation whatever in asserting that, in view of such salaries, University teachers—who are public servants no less than the Civil Service—are grossly and unfairly underpaid.

OCTOBER weather this year has created a record which has outstripped the many weather records of 1921. Each day of the first week was extremely warm. The *Times* of October 6 contained a communication on the "Warmest October day on record." Descriptive of October 5 it gave shade temperatures of 84° at Kensington Palace and Camden Square, 83° at Kew Observatory and Hampstead, 82° at Croydon, Bath, Weston-super-Mare, and South Farnborough. At Camden Square so high a reading had not previously been reached in October during a period of sixty-four years. At Kew the reading was the highest October reading in fifty years, and 6° above the previous maximum in October, 1886. On October 6 the temperature was 84° at Kensington and Hampstead, 83° at Croydon, and 82° at Kew. Temperatures of 80° and above occurred this year at Greenwich on four days between October 1 and 6, the reading was 83·3° on October 5, and 84·4° on October 6. The average maximum for the early days of October is 60°. There was only one day in September warmer than October 6, 87·9° on September 9, and there was no day so warm in August this year. In the previous eighty years, since 1841, there had been only one day in October with a shade temperature so high as 80°, the thermometer registering 81° on October 4, 1859. In 1908 there were four days, October 1–4, with the thermometer at Greenwich above 75°, the first three days each having a temperature of 78°. This is the nearest approach in October to the hot spell just experienced. In the eighty years there have been fifty-seven Octobers with the maximum for the month less than 70°, and two Octobers with the maximum less than 60°. During the night of October 3–4 the lowest temperature in parts of London was 64°. In the previous eighty years at Greenwich the thermometer has only once remained above 60° throughout the night, the highest night minimum being 60·3° on October 6, 1916. In Paris the temperature of 82·8° last week is stated to have been the highest recorded in October since 1757.

ANNOUNCEMENT is made in the *Times* of October 6 that a flashless and smokeless powder has been produced by the Ordnance Corps of the United States army, and that the flameless effect is obtained by mixing certain substances with the propellant so that a dull red glow, instead of a flame, is produced at the muzzle of the gun. The subject of flamelessness in artillery is one which presents difficulties, both as to its tactical advantage in all circumstances—for when the round is flameless there is usually a certain amount of smoke—and also as to achieving the condition in guns of all calibres. An advantage of a flameless explosive is the reduced liability to backflash on opening the breech of the gun. The subject has been studied photographically for a number of years in connection with the liability of blasting explosives to ignite fire-damp in mines, and Will showed by this method that the addition of salts, mostly of the alkaline metals, to blasting explosives suppressed the after-flame of the explosion, not only from explosives such as the carbonites (mixtures of nitroglycerine, nitrates, and oxidisable substances), but even from trinitrotoluene and picric acid. According as the mixture of gases evolved from the explosion, containing inflammable gases such as carbon monoxide and hydrogen, does or does not ignite on mixing with the air at the mouth of the bore-hole, so the explosive gives flame or is flameless. The same principle has been applied to the burning in a gun of propellants of suitable calorimetric value, and for calibres up to five inches mentioned in the *Times* report flamelessness can be attained without much difficulty. To solve the problem for larger guns is, however, by no means so easy.

IN his address on October 3 to the newly constituted Glasgow Society for Psychical Research Sir Oliver

Lodge gave an interesting exposition of his view of the æther of space as a region of possibilities in contrast with matter as a region of facts. Following Bergson's theory that memory is a purely spiritual fact which does not depend on the brain for its existence, but requires the intervention of the brain for its expression, and that mind generally, though itself psychical and not physical, needs and uses matter as its instrument, he argued that if mind when dissociated from matter continues to exist, it can only be that there is something else which can perform the function of matter and serve as its instrument. For himself he has told us he is convinced that disembodied spirit personalities do exist in fact, and therefore for him it would seem the æther is a necessary postulate. His acceptance of the principle of relativity does not apparently in the least affect his belief in the real physical existence of the æther; it seems only to have added a few more negative qualities to that exceedingly elusive stuff and made its residual positive reality more than ever difficult to imagine. Still, perhaps the new society may succeed where Michelson and Morley failed, for psychical research, as Sir Oliver conceives it, is purely and essentially physical research, however suspect to some of us its methods may appear.

LORD GREY OF FALLODON has always been a keen supporter of all legislation for the protection of wild birds. A great believer in "sanctuaries" for birds, he has done much on his own estate to shield all species which have chosen to settle there. His success with various species of wild birds he related in the course of a most delightful address given on October 6 to the Berwickshire Naturalists Association. From the strictly scientific point of view, there were many items of more than passing interest in this address. Particular attention, for example, was directed to the fact that among the Anatidæ, where the males lose their resplendent livery and go into "eclipse," they take no interest in their offspring, which have to be reared by the female alone. But where no "eclipse" dress is worn they prove devoted parents, taking their full share in the task of tending the young. That the various species of wild ducks, when in a state of Nature, are monogamous seems conclusively proved by their behaviour at Fallodon, wherein they contrast with birds of the same species in captivity.

SIR FRANK DYSON, Astronomer Royal, has been elected master of the Clockmakers' Company.

THE G. de Pontécoulant prize of the Paris Academy of Sciences has been awarded to Dr. A. C. D. Crommelin, Royal Observatory, Greenwich, in recognition of his general astronomical work.

MR. A. CHASTON CHAPMAN has been appointed a member of the Royal Commission on Awards to Inventors in succession to Sir James Dobbie, who has resigned.

A DINNER will be held at the Hotel Cecil on Tuesday, October 25, to celebrate the purchase of the Brent Valley Bird Sanctuary, and to make known the need of funds for its upkeep and endowment. The Right Hon. Viscount Grey of Fallodon, K.G., will preside. Tickets may be obtained from the honorary secretary at the Hermitage, Hanwell, W.7.

THE Royal Society of South Africa proposes to entertain the members of the Shackleton Expedition when they arrive in Cape Town. The society has entertained previous expeditions, and at a recent meeting the president expressed the hope that the forthcoming visit would arouse public interest in South Africa in scientific exploration and would lead to additional support for such enterprises.

IN the article on the explosion at the nitrogen fixation works at Oppau, in NATURE of September 29, it was pointed out that ammonium nitrate is explosive on the application of an intense initial impulse such as the detonation in its midst of a high explosive. It is, therefore, of interest to read in the *Chemical Trade Journal* (October 1, p. 409) that the directors of the Badische Anilin und Soda Fabrik have issued a report in which they state that a store of ammonium sulphonitrate exploded, and that it had been the custom to break up the stock of this mixture by means of explosive bodies. Until now the directorate had apparently considered the ammonium nitrate sufficiently deadened by the presence of the ammonium sulphate.

A MESSAGE from Col. Howard Bury to the *Times* states that a practicable route to the summit of Mount Everest has been discovered. A camp was formed at the col at the head of the Kharta Valley at a height of 22,500 ft., and Messrs. Mallory, Bullock, and Wheeler pushed on to the glacier below the north col on the following day. The north col, which connects Mount Everest with the north peak, was ascended to a height of 23,000 ft. At this point the party was stopped by bad weather, but it is believed that an ascent by the north-east *arête* will be possible. The reconnaissance of the approaches to Mount Everest from the Tibetan side is now complete, and, a route having been found, there appears to be no reason why a properly organised expedition should not reach the summit next year.

THE ninth meeting of the Indian Science Congress will be held in Madras on January 30–February 3, 1922. His Excellency Lord Willingdon, Governor of Madras, has consented to be patron of the meeting, and Mr. C. S. Middlemiss will be president. The following sectional presidents have been appointed:—Agriculture, Rai Bahadur Ganga Ram; Physics and Mathematics, Mr. T. P. Bhaskara Shastri; Chemistry, Dr. N. R. Dhar; Zoology, Mr. S. W. Kemp; Botany, Dr. W. Dudgeon; Geology, Mr. G. H. Tipper; Medical Research, Major Cunningham; Anthropology, Rai Bahadur Hira Lal. Public lectures will be delivered by Prof. Hemchandra Das Gupta, Dr. de Graaf Hunter, and Prof. J. Matthai. Capt. C. Newcomb, Khan Sahib Mohammad Azizullah, and Sahib Bahadur have been appointed honorary local secretaries. Further information can be obtained on application to Dr. J. L. Simonsen, the honorary general secretary.

THE members of the British Association had, during their recent visit to Edinburgh, an opportunity of examining the remarkable hoard found in 1819 at Taprain Law, a conical hill nearly midway between Haddington and Dunbar. The excavations were carried on by the Society of Antiquaries of Scotland, to whom Mr. Balfour, the owner of the land, generously presented all that was found, which is now exhibited in the Scottish National Museum. It is almost certain that this great collection of silver plate was a robbers' hoard. Some of the objects are plainly Christian, others pagan, with traces of Oriental decoration. The Saxons were notorious sea-raiders, while the native Celts were not, and the hoard possibly consists of plunder from churches or private houses somewhere on the Continent. It may be assumed that the *cache* was made about 1500 years ago, and the raiders who buried it were probably interrupted by the approach of another and stronger force, leaving the treasure to be unearthed by excavators in our time.

IN the Journal of the Bihar and Orissa Research Society for March, 1921, Dr. W. H. R. Rivers discusses the origin of that remarkable custom of marriage, peculiar to the Rajputs, known to anthropologists as hypergamy. Under this system a man must take his wife from a group of equal or lower rank than his own, while a woman must marry a man from a group of equal or higher rank than her own. He suggests that it arose as the result of the influence of certain conditions operating in the case of the occupation of a country by a race of warriors—a sentiment among the invaders against the union of their women with the indigenous inhabitants of their new home; the fact that many women, but in numbers smaller than those of the men, accompanied the invaders; the warlike character of the invaders, and their superiority in equipment over the indigenous people, which allowed them to satisfy their own desire for union with the indigenous women without giving their own women in return. The first of these conditions was probably the most important. The institution became specialised among the Rajputs because among the other immigrant race, that of the Brahmans, who had the same sentiment about their women, their sanctity enforced endogamy. "It is probably to this positive character of the sanctity of the Brahman rather than to the negative character of their unwarlike nature that we must look for the clue to the development of endogamy in place of the hypergamy of the Rajputs."

IN the *Irish Naturalist* for September the Rev. W. F. Johnson continues his valuable observations on the Irish Ichneumonidæ and Braconidæ, and records more than one hundred species belonging to these obscure and little known groups of Hymenoptera, mainly from Poyntzpass. Three species are added to the British and Irish list, *Microcryptus femoralis*, *Glypta schneideri*, and *Mesoleius fraternus*.

ANNALS of the South African Museum (vol. 18, part 3) consists of an important illustrated monograph by Dr. F. Ris on "The Dragon-flies of South Africa." It occupies upwards of 200 pages, and is prefaced by a general account of those structural features which are useful in classification. Both sub-orders of these insects are well represented, and one genus and rather more than a dozen species are described as new. The work should prove valuable to resident entomologists in South Africa as an aid to the identification of the various species, and at the same time enable them to extend our very meagre knowledge of the biology of the dragon-flies of the countries concerned.

OWING to the damage wrought by vast numbers of ducks on the rice-fields of California an aeroplane patrol was established, charged with the task of flying over the fields to frighten away the birds. This method was inaugurated in 1919, and was so successful that now five aeroplanes "are kept busy, making both night and day flights to frighten off the wild ducks." But while the farmers are highly pleased, the American Game Protection Association is greatly perturbed, and this because of the number of birds killed by striking the propellers and guy-ropes. Thus, according to the July issue of *California Fish and Game*, the association has demanded that permits for the use of aeroplanes for this purpose should be revoked.

IN the August issue of the *Entomologist's Monthly Magazine* Mr. E. E. Green describes two new species of Coccidæ from Britain, viz. *Pseudococcus paludinus*, nov., and *Ripersia scirpi*, nov. The former occurred on the foliage of various plants in Wicken Fen, and the latter was met with at Camberley on the stems of *Scirpus caespitosus*. Mr. L. A. Box records *Gronotoma nigricornis*, Keef., a Cynipoid insect new to the fauna of Britain. The insect was bred from the pupæ of an Agromyzid fly found at Blakeney Point, Norfolk. In the September issue of the same journal Mr. B. P. Uvarov describes a new genus and species of wingless, long-horned grasshoppers from the collection in the British Museum. The species, which is named *Chapardina importata*, was obtained from a greenhouse at Richmond, and there is no doubt that it was imported from some exotic country. The land of its origin is a matter for speculation, and it may possibly have come originally from some part of the Oriental region.

IN *La Nature* (No. 2475) M. Léon Bertin reviews recent work on the so-called habit of feigning death which has been attributed to many animals belonging to varied groups, especially to mammals and arthropods. The phenomenon has been variously ascribed to conscious action or intelligence, instinct, or an extreme state of fear, and M. Bertin protests against these vague anthropomorphic explanations unsupported by systematic study and experimental proof. He cites the work of M. Rabaud, who showed that by the stimulation of certain areas of the body of arthropods, particularly the sternum and the lateral parts of the thorax, a state of catalepsy or insensibility could be induced, lasting for varied times according to the strength of the stimulus, the particular animal operated on, and even the temperature. Similarly, he demonstrated the existence of other areas, the tarsi of the legs and the tip of the abdomen, the excitation of which restored the animal to the normal. M. Rabaud believes that most of the instances of feigning death cited among the arthropods can be explained on the above grounds as pure reflex phenomena in which the organs of perception (visual, olfactory, and auditory) play at most an insignificant part. He even suggests that similar reflex areas can be demonstrated in the vertebrates, and that the feigning of death in that group is also largely a reflex phenomenon. He combats strongly the view that it is a conscious action, or instinctive, or the result of fear, and proceeds to demonstrate that the view that it is a protective attitude is untenable. The precise physiological explanation is still obscure, but M. Bertin rightly insists on the importance of M. Rabaud's observations.

A REPORT prepared for the National Research Council by Messrs. E. B. Mathews and H. P. Little on the position of geology and geography in the United States is published in the Bulletin of the Geological Society of America for April, 1921. It appears from this report that out of 571 colleges and universities, 466, or 81 per cent., offer no instruction in geography. Of the remaining 105 colleges only 31 offer courses of more than two years' duration, and no more than six of these train students in advanced work. Poor as this equipment in geographical teaching is, it is fairly evenly distributed throughout the States with the exception of those in the south. The demand for trained geographers far exceeds the supply. In geology opportunities for training are more satisfactory, although out of the 571 institutions 144 offer no instruction in geology and 268 none worthy of the name. As many as 97 colleges, however, provide courses of four or more years' duration. As in geography, the southern States provide few advanced courses.

THE Geological Survey of Scotland has issued a new edition (1921, 2*s.* 6*d.*) of the memoir describing the Arthur's Seat volcano. Few alterations have been made in Dr. B. N. Peach's text, but Dr. Flett has now described the igneous rocks in accordance with the current classification of the Carboniferous lavas of Scotland. Prof. Judd's view is maintained, namely, that the eruptions form a continuous series, and that the apparent break under the Lion's Haunch is due to the accumulation of the later lavas and agglomerates in a vent from which the earlier bedded lavas had been erupted. A coloured geological map on the scale of six inches to one mile is now inserted in the memoir. The "Summary of Progress of the Geological Survey of Great Britain for 1920" (3*s.* 6*d.*) covers a wide range, from Brockenhurst to Banff. Numerous observations of interest are recorded from western Mull and the adjacent islets. A deposit of Cainozoic desert-sand has been found overlying the chalk at Gribun. The common origin of the two layers of basalt that form respectively the walls and the roof of Fingal's Cave must have been recognised long ago, since Scrope dealt with the matter in the Vivarais in 1825 ("Volcanos," p. 141). We now, however, have an authoritative statement on this point, while a triple zoning is described in other flows, where a slaggy top remains above the irregularly columnar portion.

AN important paper by Prof. H. E. Armstrong and Mr. C. A. Klein on "Paints, Painting, and Painters" is published in the Journal of the Royal Society of Arts of August 26 (vol. 69, No. 3588). As is well known, painters are liable to contract lead poisoning, and at the International Labour Congress to be held in Geneva this month the question of the prohibition of the use of white lead in paint is to be discussed. Prof. Armstrong and Mr. Klein consider that the risk to the painter of lead poisoning has been much exaggerated, and support this conclusion with much experimental work. Some of the ills from which painters suffer are to be attributed, not to the lead, but to the turpentine or other volatile "thinner" with which the paint is made. They point out that white-lead paints have special properties not possessed by substitutes, and they maintain that by the use of a few simple expedients the risks incurred by the painter from the use of lead paints may be practically eliminated. The paper is one that should be studied by all interested in industrial hygiene.

ACCORDING to the report of the work of the Physical Department of the Ministry of Public Works, Egypt, for the year ending March, 1920, the department has returned to normal working conditions from the disturbed state which existed during the war. The hydrographical section is responsible for the Nile gauges and for the rainfall records, and, in addition, tests measuring tapes, thermometers, and barometers. The meteorological section issues the weather reports and forecasts, and runs the Helwan Observatory. A weights and measures section, in maintaining just standards, takes action against three or four thousand persons per annum, and secures convictions in 98 per cent. of the cases. About four thousand scientific instruments were repaired in the workshops during the year, while the research section carried out work on the sulphuric acid hygrometer, and devised and tested a "turbulance gauge" for use in measuring river discharge.

THE "Prizma" process of colour cinematography, invented by Mr. W. V. D. Kelley, which is now being introduced as a practical method, is described in the current number of *Conquest* by Mr. E. R. Mason-Thompson, M.A. It is analogous to "Kinemacolor," but each pair of red-orange and blue-green records is taken simultaneously, the light passing through the lens to the film being divided by optical means so as to give two pictures at each exposure. In printing the positive, the negative moves twice as far as the positive film, and thus all the records of the same colour are printed as consecutive pictures. The positive film is then similarly exposed on its other side (both sides are coated with sensitive emulsion) to the records of the other colour in such manner that each pair of pictures registers. Each side of the film is then separately mordanted and treated with a dye of appropriate colour. The two coloured images being superposed, the positive film is half the length required by the "Kinemacolor" process, it does not need to be passed through the exhibiting lantern at double the usual speed, and it is claimed that the difficulty of colour fringes in the case of quickly moving objects is eliminated.

AN account of the Temple submarine stud driver appears in *Engineering* for September 30. The function of this appliance is to fix studs into ships' plates or other steelwork under water, so that patching plates or attachments for lifting may be bolted on. The studs used at a demonstration at Caxton Hall were of tool steel, tempered to a dark blue colour. One end of the stud is bluntly pointed and the other end has a screw thread cut on it. The studs are shot from the muzzle of a gun held in contact with the plate, and pierce the plate so that about an equal length of the stud is left projecting on both sides. The operation of driving the stud is instantaneous, and the noise is scarcely more than that of an airgun. The explosive charge may consist of any ordinary propellent explosive, and in quantity is about the same as in a standard 0·303 rifle cartridge. It is stated that studs can be driven into solid steel by the Temple gun, and that two $\frac{5}{8}$ in. plates can be pinned together by studs shot through them; also a pin of only $\frac{1}{8}$ in. diameter can be driven through a $1\frac{1}{4}$ in. plate. This appliance, which has been invented by Mr. Robert Temple, is certainly a very remarkable one. The process is in the hands of the Temple Cox Research Company, Dacre House, Dean Farrar Street, Westminster.

SIR THOMAS HEATH considers that of all the manifestations of the Greek genius none is more impressive, and even awe-inspiring, than that which is revealed by the history of Greek mathematics. The Oxford University Press is publishing immediately in two volumes "A History of Greek Mathematics," by Sir Thomas Heath.

Our Astronomical Column.

THE LUNAR ECLIPSE OF SUNDAY, OCTOBER 16.—This eclipse, which will be nearly total, begins at 9h. 14m. (position angle 45°), reaches its greatest phase (0·938 of the diameter, the south limb being uneclipsed) at 10h. 54m., and ends at 12h. 34m. (position angle 283°). As there is not another large lunar eclipse visible at a convenient altitude in the British Isles until September, 1932, this occasion should be utilised. The chief work during lunar eclipses is the observation of occultations, both phases being visible under similar conditions. Such observations facilitate the determination of the moon's diameter, and serve to test the suggestion that the lunar atmosphere may have more refractive power by day than by night. Six stars in the Bonn Durchmusterung will be occulted during eclipse. The details are given in the following list (computed for Greenwich):—

B.D. number	Mag.	Disappearance	Angle	Reappearance	Angle
°		h. m.	°	h. m.	
7·218	9·2	10 3	24	10 59	292
7·222	9·3	10 19	56	11 35	258
7·224	9·0	10 20	100	11 25	214
7·225	9·5	10 28	70	11 46	243
7·228	9·3	10 57	90	12 10	225
7·227	9·1	11 6	41	12 17	273

The angles are measured from the north point towards the east.

The occultation of 263 B Piscium, mag. 6·4, may also be mentioned, though it does not occur at the eclipsed limb; the times and angles are 8h. 55m., 90°, and 10h. 3m., 224°.

It is also of interest to study the colour and amount of illumination of the region in shadow; probably the variations from one eclipse to another arise from differences in the transparency of the earth's atmosphere. It would be well to examine some of the regions, such as Aristillus, in which Prof. W. H. Pickering has observed changes during the lunation, as it is possible that their appearance might be affected by the passage of the shadow.

MORNING STARS.—Before sunrise on clear mornings, during the last half of October, there will be an unusual and striking display of four brilliant planets. Venus, Mars, Jupiter, and Saturn will all be visible, and will continue to be so during the remaining months of the present year. Their variations of position will induce a number of interesting conjunctions and configurations, both amongst themselves and with the waning crescent of the moon as she passes them in her monthly round.

On October 16 Venus will rise at 3.43 a.m., Mars at 3.0 a.m., Jupiter at 4.41 a.m., and Saturn at 4.19 a.m. On this date, an hour before sunrise, the four planets named will form an almost perpendicular line over the east by south horizon.

The following conjunctions will occur:—

		h. m.			°	
Oct.	22	7 55 a.m.	Venus and Saturn	Venus	0 35	South
,,	25	4 12 p.m.	Venus and Jupiter	Venus	0 31	North
,,	28	1 18 a.m.	Mars and Moon	Mars	3 38	,,
,,	28	3 24 p.m.	Saturn and Moon	Saturn	3 41	,,
,,	28	10 0 p.m.	Jupiter and Moon	Jupiter	2 14	,,
,,	29	3 56 a.m.	Venus and Moon	Venus	2 25	,,
,,	30	11 58 p.m.	Mercury and Moon	Mercury	2 36	South

These occurrences will not be all visible, as they take place at unsuitable times, but the objects mentioned may be observed in proximity on the mornings before and after the events named.

In November, during the last fortnight of the month, the planet Mercury will also be favourably visible and add another interesting object to the unusual assemblage of brilliant planets in the morning sky.

LARGE FIREBALL.—Mr. W. F. Denning writes:—"On October 6, 9h. 25m. G.M.T., a fireball of unusual brilliancy was observed by Mr. J. P. M. Prentice at Stowmarket. It was of a beautiful orange colour, with a thick streak, and burst in the middle of its flight, leaving a blue-green cloud of gaseous material which was visible for eight seconds. The fireball was also seen by the writer at Bristol, and he rated it as much more brilliant than Venus, but it was unfavourably seen right through a cloud, which it rather brightly illuminated. The nucleus could be distinctly traced as it pursued its path, and the position could be accurately recorded from a few bright stars which were not obscured at the moment. The radiant point of the object was near β-Aurigæ at $87^\circ+40^\circ$, and the height of the object from 86 to 48 miles from over the mouth of the Thames to Littlehampton in Sussex."